# roshiba

STEREO CASSETTE DECK

# PC-N12



#### **SPECIFICATIONS**

Heads:

Record/playback head: Super AP (super-hard permalloy)

head  $\times$  1

Erase head: AF (2 gap ferrite)

head x 1

Tape Transport: Motor:

Dual motor IC logic control Capstan drive: DC servo motor

x 1

Reel drive: DC motor x 1 0.04% WTD, RMS ±0.15% Wow & Flutter:

(DIN)

Rewind/fast forward

Time: Approximately 80 seconds

(C-60)

Frequency Response: 25 Hz - 18,000 Hz for metal

tapes

25 Hz - 17,000 for chrome

type tapes

25 Hz - 16,000 for normal

tapes

Signal-to-noise Ratio: 60 dB (Line in, Peak level, WTD) Dolby NR Effect:

5 dB improvement at 1 KHz

10 dB improvement above

5 kHz

Distortion: 0.7% (0 dB, 400 Hz) Input Level:

MIC:

0.25mV (600 ohm -

10 k ohm)

Output Level:

LINE: 70 mV (50 k ohm) LINE: 0.4V (50 k ohm) PHONES: 0.14mW (8 ohm)

Semiconductors:

ICs: 11

Transistors: 43 FETs: 4

Diodes: 47

Power Supply:

LEDs: 25

AC 240V 50 Hz for Europe AC 240V 50 Hz for United

Kingdom & Australia AC 115V/230V 50 Hz/60 Hz for Southeast Asia, South America and Middle East AC 120V 60Hz for U.S.A.

and Canada

Power Consumption: 22W

Dimensions:

Weight:

257(W) × 106(H) × 214(D) mm (including knobs and feet)

3.8 kg

Accessories:

Audio cables x 2

Dustcover Head cleaner

Specification are subject to change without notice

TA, TC, TE, TU, AY, VF

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DOLBY SYSTEM

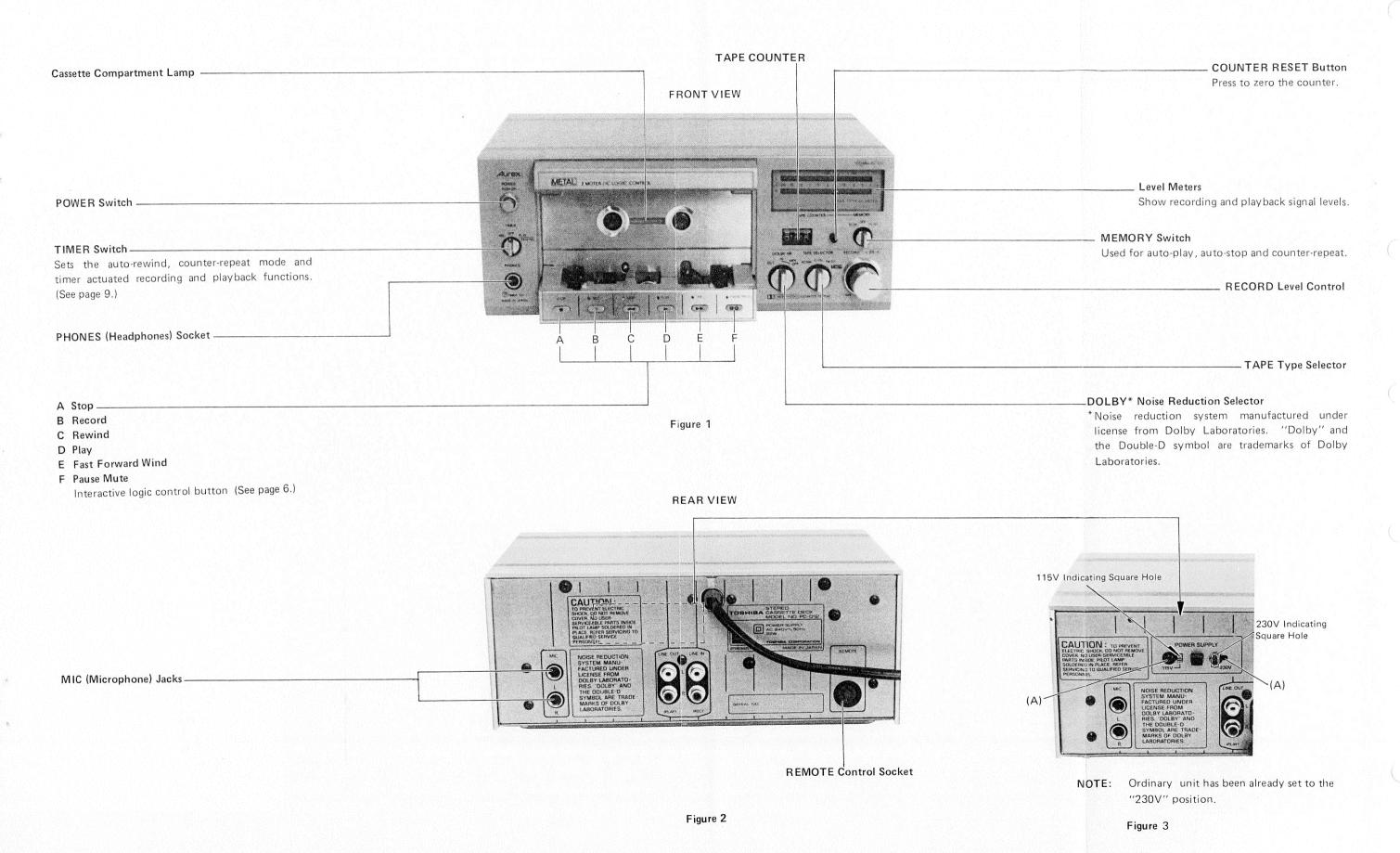
### 1.FEATURES

- Silent mechanism with two-motor IC logic controls:
  - Light-touch, tape transport control buttons have integral LED indicators (except the STOP button).
  - The dual-motor system has a DC servo motor for capstan drive and a DC motor for reel drive to ensure reliable, simple and silent operation.
- LED peak level meters:
  - Unlike electromechanical meters, LED level meters have no moving parts, and respond quickly and accurately to every peak in the input signals. Red LEDs indicate signals above 0 dB, and green LEDs indicate signals below 0 dB.
- Memory counter feature:
  - Auto stop, auto play, auto rewind, and counter repeat are provided as standard. Other features include unattended recording, alarm playback, and so forth.
- Four-position tape selector includes METAL position.
- METAL tape capability and super AP heads—the hyperbolic head surface assures stable tape contact for all tape types giving excellent recording/playback performance.
- Direct loading system—gives maximum tape visibility and easier tape loading/unloading.
- Dolby NR system with MPX ON/OFF feature.
- Remote control with optional remote control unit.

<sup>\*</sup>Noise Reduction System is manufactured under license from Dolby Laboratories.

<sup>&</sup>quot;DOLBY" and the Double-D symbol are Trademarks of Dolby Laboratories Inc.

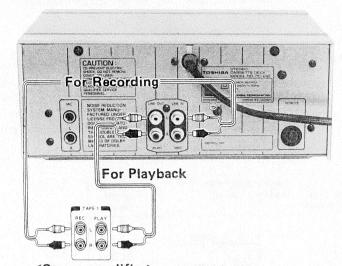
# 2. OPERATING CONTROLS



### 3. OPERATING INSTRUCTIONS

## Setting up your PC-D12

<Rear Panel PC-D12>



# <Stereo amplifier> Figure 4

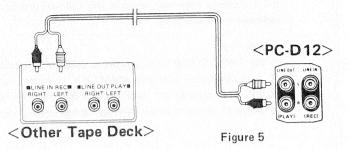
- ① Disconnect all power from your hi-fi system by removing the plugs from the AC outlets. (Be sure to pull the plug itself, never the cable.)
- ② Connection to a Stereo Amplifier or Stereo Radio Receiver.
- •Plug either of the supplied audio leads into the REC sockets on the back of the cassettes deck, and plug the other end of this lead into the REC or LINE IN sockets on your amplifier (or radio receiver)—use red plugs for the right channel.
- •Plug the other audio lead into the PLAY sockets on the back of the cassette deck, and plug the other end of this lead into the PLAY or LINE OUT sockets on your amplifier—red for the right channel.
- •Insert all the plugs fully to prevent noise.
- If your amplifier has different type sockets, consult your dealer and your amplifier instruction manual.
   The Remote Control RM-15S (optional accessory) should be plugged into the remote control socket.
- 3 Insert the AC power plug.
- 4 Press the POWER swith on the front panel. The meters and cassette compartment lamp will light.

# Connections for Tape Copying Direct from Another Tape Deck

If you are not using a stereo amplifier that has a tape copying or dubbing switch and you want to make tape copies direct from another tape deck, connect the two decks with one cable as shown below. The diagram shows playback on the PC-D12. To record on the PC-D12, reverse the connections.

• Use red plugs for the right channel. Insert the plugs

Note: If hum noise generates, try to relocate the deck.

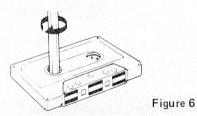


#### Cassette tapes

 The PC-D12 can record and play back cassette tapes with METAL, Chrome type, Normal (ferric) or Fe-Cr coatings. Select a tape type suited to your recording application, whether conversation, classical music, popular music, and so on.

#### Cassette Loading

- 1. Before loading a cassette, always take up any tape slack with your fingernail or a pencil to prevent the tape from entangling around the capstan.
- 2. Insert the cassette with the side you wish to record or play facing you, and the tape facing down,



#### **Erasure Prevention Tabs**

This deck has an erasure safety device. To prevent accidental erasure of a recorded tape, remove the tab as illustrated. To enable recording of a tape after removal of these tabs, cover the holes with adhesive tape.

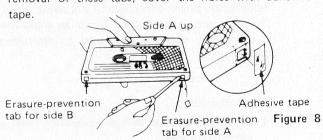
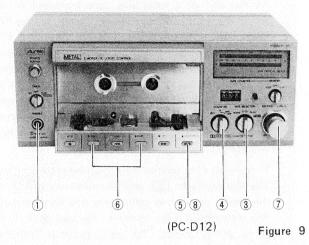


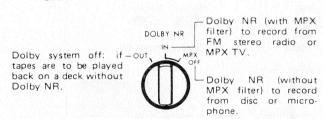
Figure 7

#### Recording

From Radio, Disc, Another Tape Unit, or TV (Numbers refer to the steps below)



- 1) Set the TIMER switch to OFF.
- 2 Insert a cassette—with tab for the side you will record.
- 3 Set the TAPE selector to the tape type used: NORM, CrO<sub>2</sub>, METAL or Fe-Cr.
- (4) Set the Dolby NR selector.
  - Dolby NR recording have reduced tape-hiss on playback.



- ⑤ Press the PAUSE/MUTE button to enter PAUSE mode.
- 6 Press the REC and PLAY buttons simultaneously.
- The set the RECORD level control so that the peaks of the programme signal light the peak level meters as shown below.
- ® Press the PC-D12 PAUSE/MUTE button momentarily. Recording will start.
- To stop recording, press either the PAUSE/MUTE, button momentarily, or the STOP button. Alternatively, the REW button can be pressed immediately to rewind the tape ready for playback.

#### Microphone Recording

For microphone recording, follow the recording steps given on the left after plugging the microphone(s) into the MIC jacks.

#### Fade-up Start

A professional-sounding fade-up start can be easily achieved. Note the exact position of the RECORD level control in step ① and set the RECORD level control to zero. Just after pressing the PAUSE/MUTE button in step ⑧, smoothly turn the RECORD level control up to the correct position.

• The Auto Shut Off (ASO) feature automatically disengages the tape transport when the end of the tape is reached in any transport mode (play, rewind, etc.).

#### Note:

- The tape transport controls become operable a few seconds after power is switched on.
- When the unit is turned off, if enters stop mode, irrespective of its current mode.
- If there is no cassette loaded, all the tape transport controls will remain inoperative.
- To load or remove a tape, first press the upper part of the cassette against the top of the cassette compartment.

#### Setting the Recording Level

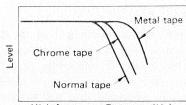
The correct recording level depends considerably on the type of tape used and the program material being recorded. The correct tape type and recording level should be selected to give the best frequency response yet lowest noise level.

For the following three tape types, the RECORD level control should be set so that the peak level meters light at the loudest passage of that programme selection:

Tape type	Peak level meters
NORMAL (ferric) tape	-6 dB or 0 dB
CHROME type tape	-3 dB or +3 dB
METAL alloy tape	0 dB or +5 dB

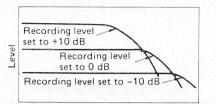
The high-frequency response, in particular, depends considerably on the type of tape and the recording level. Metal-alloy tape, for instance, provides better high-frequency response than normal tape, thus giving much better reproduction of higher pitched instruments and voices. This is illustrated in Fig. 10.

For the same tape type, at lower recording levels, there is better higher-frequency response as shown in Fig. 11. So, to record programme material which contains considerable high-frequency sound, set the recording level somewhat lower. The level meter on this deck is an electronic "digital" indicator, which displays the peaks of the signal, in red over 0 dB and in green below.



High-frequency Response (Hz)

Frequency Response Curves for Different Types of Tape



High-frequency Response (Hz)

Frequency Response Curves at Different Recording Levels

Figure 11

#### Mute Recording

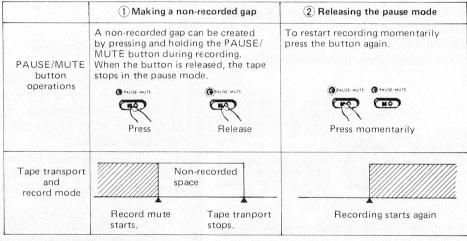
After recording a piece of music, you may want to create a short silent space before further recording. The advanced—logic MUTE feature of this deck allows you to do this easily and professionally.

At the end of a recording, tape transport is normally stopped by pressing the STOP button or the PAUSE/-MITE button momentarily. If, however, the PAUSE/-MUTE button is pressed and held in during recording, the tape continues to run but will be erased. When the button is released, the tape will stop in record standby made ready to continue recording. To start recording again press the PAUSE/MUTE button a second time,; when the PAUSE/MUTE button is released, recording will start.

This allows very precise setting of the recording level. The Dolby mark  $\square$  and the odres mark  $\boxed{AD}$  indicate the Dolby and odres calibration positions, respectively. The odres mark is for use when the tape deck is connected to an odres unit. The odres sytem is Toshiba's new

noise reduction and dynamic range expansion system.

The PAUSE/MUTE button therefore serves a dual purpose: record mute and pause. For proper operation follow the steps given in the table just below. This is illustrated below

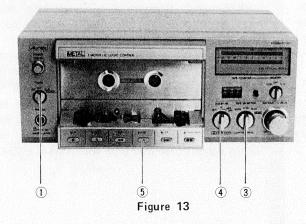


 When the button is pressed during playback, only the pause function operates. The PAUSE/ MUTE button is not effective in the fast-forward and rewind modes.

Figure 12

### Playback

Normal Playback
(Numbers refer to the steps below)



- (1) Set the TIMER switch to OFF.
- 2 Insert the cassette with the play side facing you.
- 3 Set the TAPE selector for the tape type NORM, CrO<sub>2</sub>, METAL or Fe-Cr.
- Set the Dolby NR switch to
  - IN for tapes recorded with Dolby NR OUT for other tapes.

Note: The IN and MPX OFF positions give the same operation in play back.

- 5 Press the PLAY button to start playback.
- ⑥ To go from playback to another mode, the PAUSE/ MUTE, REW, FF or STOP buttons may be pressed directly.
- The end of the tape, playback will automatically stop.

#### Automatic Tape Control

The MEMORY switch, TIMER switch and TAPE COUNT-ER functions together provide the following automatic tape control functions.

#### [Auto Play]

If the TAPE COUNTER is reset to 000 at the beginning of a programme and the MEMORY switch is set to PLAY, the programme will be automatically rewound to 999 and replayed when the rewind button is pressed.

#### [Auto Rewind]

If the TIMER switch is set to PLAY/ REW, the tape will automatically rewind to the beginning when the end of the tape is reached in the play or record modes. The MEMORY switch must be set to OFF to enable this TIMER function.

#### [Counter Repeat]

If the MEMORY switch is set to PLAY and the TIMER switch is set to PLAY/ REW, the tape will replay repeatedly between tape location 999 and the end of the tape. If the TAPE COUNTER is reset to 000 at the head of a cassette tape, the entire side of the tape will be repeatedly replayed.

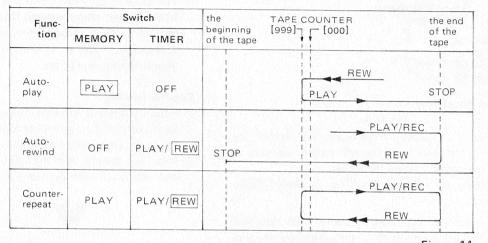


Figure 14

#### Timer Recording/Playback

When the end of a tape is reached during unattended recording or playback, the tape stops and the tape transport is automatically disengaged. However, the power to the deck and your stereo system will remain on, causing unnecessary power consumption and possible danger.

To avoid this, it is advisable to use an audio timer that automatically switches the power to the system both on and off.

#### Timer Recording

- 1. Set up the cassette deck and amplifier, tuner, etc. for normal recording.
- 2. Set the audio timer to the desired recording start time, and also set it to switch off the power to the system.
- 3. Leave the PC-D12 POWER switch on.
- 4. Set the TIMER switch to REC.

When the time preset on the audio timer is reached, the audio system power will be turned on, and automatic recording will start.

Note: Set the TIMER switch to OFF when automatic recording has been completed. If the TIMER switch is accidentally left in the REC position, a portion of a recorded tape may be unintentionally erased when the power is switched on.

#### Timer Playback

(for morning alarm, etc.)

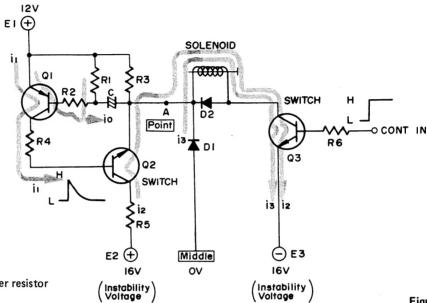
- 1. Play the tape to be used for the morning alarm and adjust the amplifier volume control to a suitable volume level
- 2. Set the audio timer to the desired alarm time, and also set it to switch off the power to the system.
- Set the tape deck TIMER switch to the PLAY position.

When the preset alarm time is reached, the tape deck will automatically start playback.

### 4. TECHNICAL POINTS

### Solenoid drive circuit

Stabilized Voltage



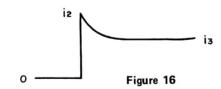
R2, R4, R6: Base current limiter resistor

R1, C: Time constant circuit

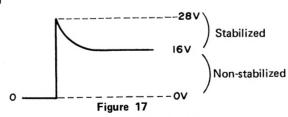
R5: Q2 protection resistor

Figure 15

- ① When an input of H-level enters into the CONT IN, the switch transistor Q3 turns on and the voltage at the point A, + 12V up to that time, lowers.
- 2 When the voltage at the point A has lowered, the charging current io flows in C through R1 and R2.
- 3 When the current io flows in C, the switch Q1 turns on to let the current i1 flow, and the switch Q2 turns on.
- (4) When the switch Q2 has turned on, the current i2 flows and the voltage at the point A becomes positive.
- (5) After a certain time has elapsed, the charging current in C lowers to minimum and the current i1 lowers also to zero. Then, the switch Q2 turns off.
- 6 When the switch Q2 has turned off, the current flowing in the solenoid lowers gradually to i3.



7 Voltage applied to the solenoid

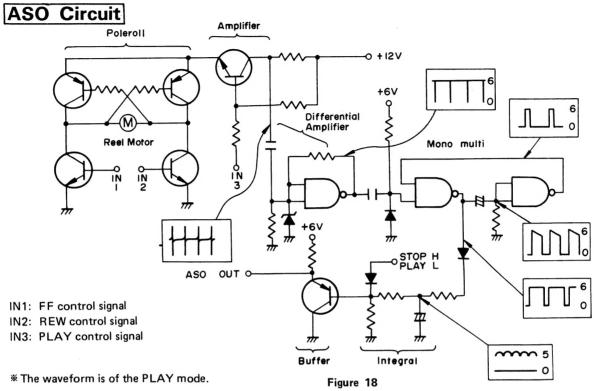


The voltage applied immediately after the switch turns on is half stabilized to suppress voltage fluctuation at the start time.

#### Purpose of this circuit

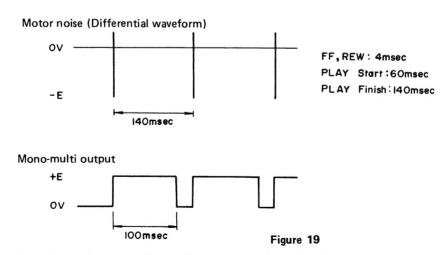
In a logic control tape deck, a solenoid is used to operate a head and pinchroller in the PLAY and REC modes. The characteristic of a solenoid needs a large current for absorption, but does't need a large holding current after absorption.

The solenoid drive circuit stabilizes the voltage applied at the start time, and prevents lowering of the operating force when the voltage lowers.



#### (Operation)

- 1. Amplify the commutator noise of the reel motor, and differentiate and amplify it to operate the mono-multi.
- 2. Integrate the above signal, and maintain the H-level during tape running.
- 3. When the tape has come to the end and the reel motor has stopped, the motor noise lowers to zero and the monomulti becomes to the L-level. Then the integrated voltage lowers gradually to zero. Set the ASO OUT to the L-level through the buffer.
- 4. When the ASO OUT connected to the Z-input of the logic IC lowers to the L-level, the control circuit turns off.



The mono-multi cycle is set almost the same as the maximum motor noise cycle value so that the duty ratio does not exceed 1:1;

#### Purpose of this circuit

The ASO circuit which detects the reel motor rotation by the rotation of the counter driven with a belt from the reel platform, is changed the detection method: detecting the reel motor rotation directly. Since this method does not require a rotation detecting element, the number of lead wires connected to the mechanism can be decreased.

### 5. DISASSEMBLY INSTRUCTIONS

#### FRONT PANEL REMOVAL

- 1. Remove two screws (1) (2.6 $\phi$  x 6mm), then Key Box Assembly can be removed from the unit. When replacing, set it at the end.
- 2. Remove two select knobs (2) as shown in Figure 20.
- 3. Remove two screws (3)  $(3\phi \times 6\text{mm})$  holding bottom plate and panel from back side and two screws (4)  $(3\phi \times 6\text{mm})$  holding jack plate and panel from back side as shown in Figure 20 and 21.

#### SIDE PANEL REMOVAL

- 1. Remove front panel.
- 2. Remove four screws (5) (2.6 $\phi$  x 6mm) holding side plate and mounting bracket, then plate can be removed out to check both sides of P.C. Board easily.

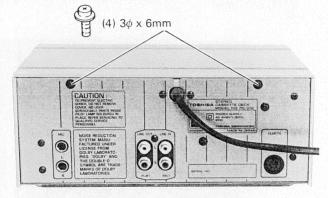


Figure 21

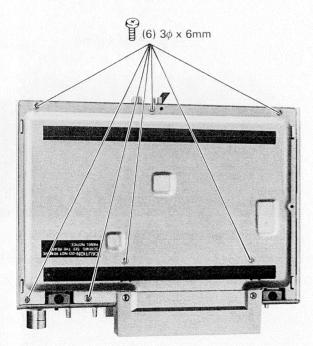
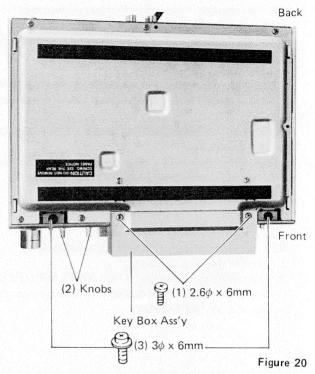
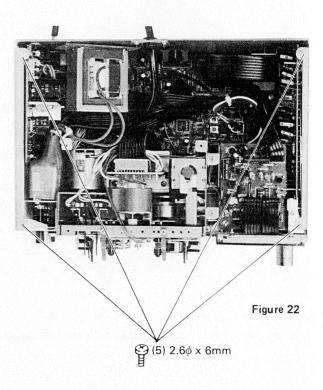


Figure 23

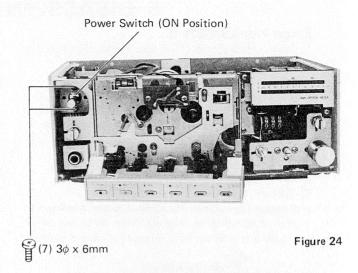




#### **BOTTOM PLATE REMOVAL**

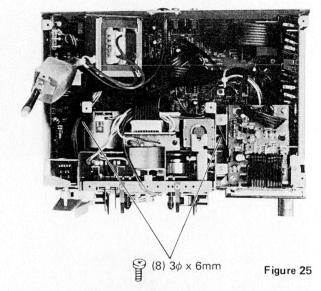
- 1. Remove front panel.
- 2. Remove side plate.
- 3. Remove seven screws (6) (3 $\phi$  x 6mm) holding bottom plate as shown in Figure 23.
- 4. After pushing power switch to position, remove two screws (7) (3 $\phi$  x 6mm) holding mounting bracket as shown in Figure 24.
- 5. Remove two screws (8) (3 $\phi$  x 6mm) holding Mechanism Assembly and bottom plate as shown in Figure 25.
- 6. Slide bottom plate forwards so that Main P.C. Board can be checked easily.

**Caution:** Mechanism Assembly should be carefully handed for it is holding all P.C. Boards.



#### KEY BOARD SWITCH P.C. BOARD REMOVAL

- 1. Remove Key Box Assembly.
- 2. Remove three screws (9) (1.7 $\phi$  x 4mm) holding P.C. Board, then Key Board Switch P.C. Board can be removed from box assembly.



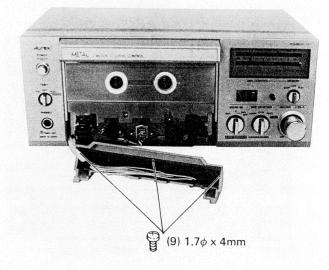


Figure 26

# 6. BLOCK DIAGRAM

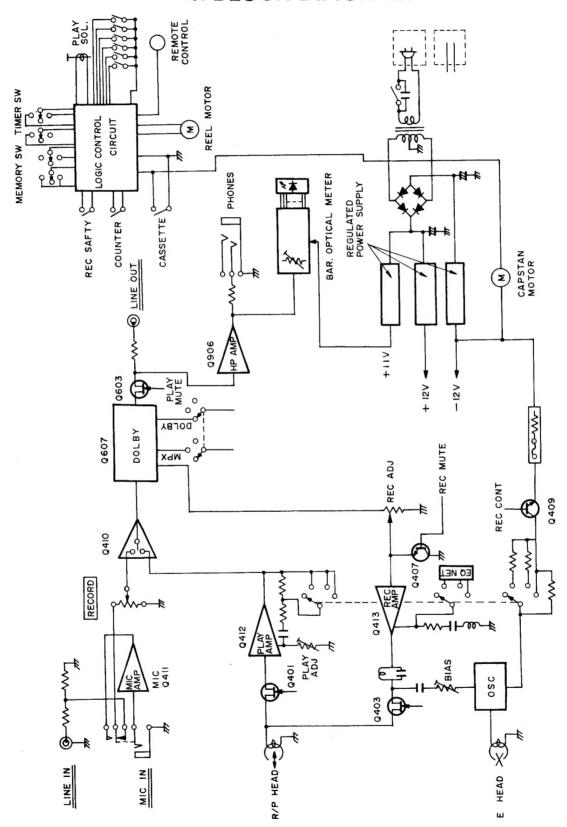
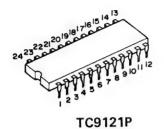


Figure 27

## 7.IC BLOCK DIAGRAM



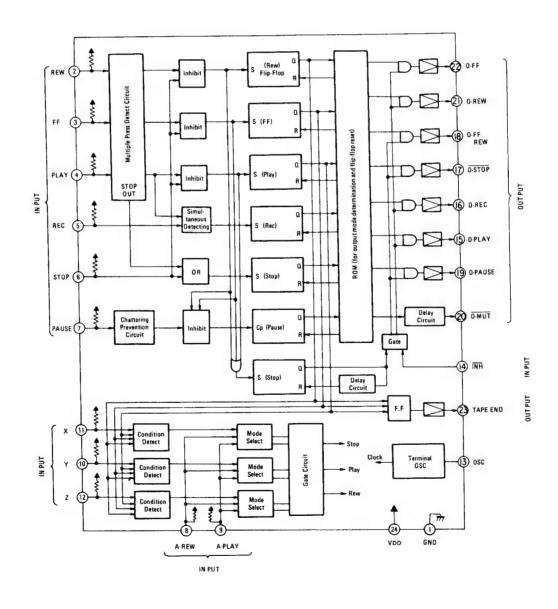
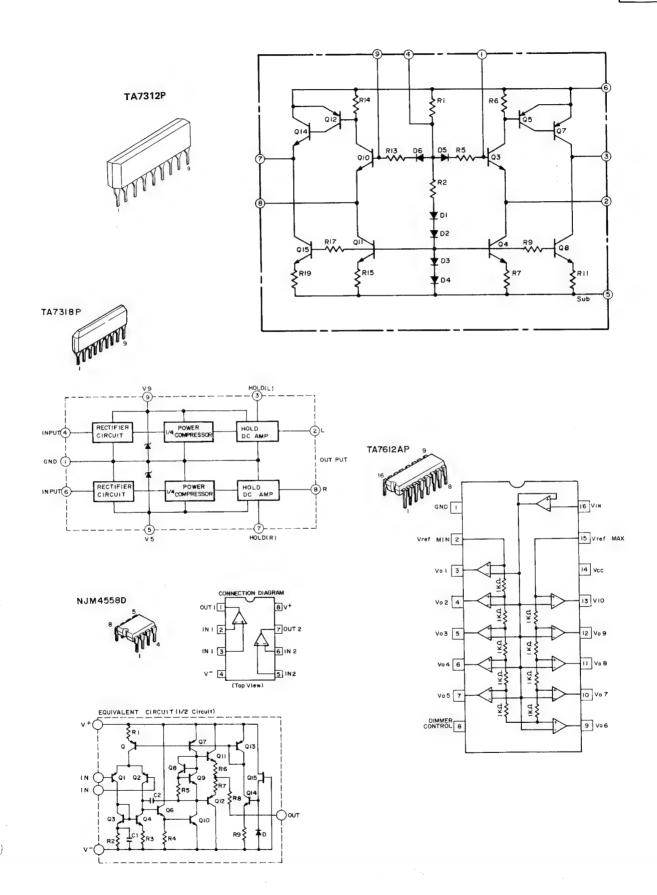
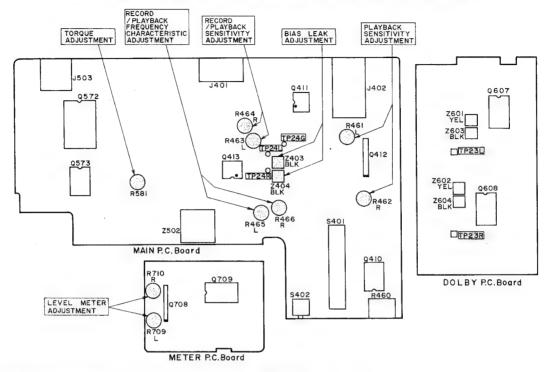


Figure 28



### 8. ELECTRICAL ADJUSTMENTS



#### **TEST EQUIPMENTS**

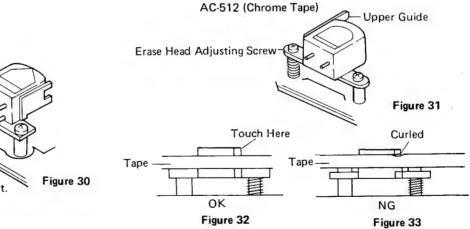
- 1. VTVM (Vacuum Tube Voltmeter)
- 2. Signal Generator
- 3. Resistance Attenuator
- 4. Screwdriver

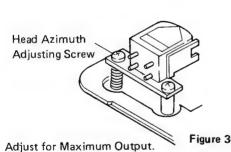
Figure 29

5 Test Tapes: MTT-111 (Speed 3 kHz)

MTT-150 (Dolby 400 Hz Moduration)

MTT-215C (Azimuth 400 Hz/10 kHz)





#### **ERASE HEAD HEIGHT ADJUSTMENT**

- Temporally mount the rerase head so that it will be even by eye measurement.
- 2. Set in PLAY position with setting a mirrow cassette tape, MC-09C.
- Adjust the height adjusting screw so that the upper edge of the tape will touch at the upper tape guide of the erase head. See figure 31.
- Confirm whether the upper edge of the tape is not Curled.
- 5. Paint the adjusting screw with lock paint.
- P.S. When the mirror cassette is not available, please remodel a normal tape, type C-90 as shown below.

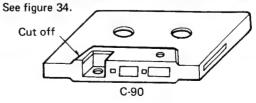


Figure 34

#### ■ ADJUSTMENT PROCEDURES

No.	Description	Nominal	Test	Volume Control	Switch Position		Adjustment	Test	Test Freq.	Remarks
		Specs	Tape	REC	TAPE	DOLBY	Points	Points	ATT	nemarks
1	Head Azimuth Adjustment	MAX.	MTT-111	,	NOR	оит	Head Azimuth Adjustment Screw	LINE OUT		After Adjustment lock with screw point.
2	Tape Speed Measurement	3000 ±30 Hz	MTT-111	.*	NOR	ООТ	Semi-fixed resistor in the Motor	LINE OUT		
3	Playback Sensitivity Adjustment	580 ±10mV	MTT-150		NOR	OUT	R461 R462	LINE OUT		
4	Playback Frequency Response Measurement (Normal)	+3 -5 dB	MTT-215C		NOR	OUT		LINE OUT		10 KHz Level difference for 315 Hz
5	Playback Frequency Response Measurement (Chrome)	-4 ±2 dB	MTT-215C	·	NOR	оит		LINE OUT		Change for 10 KHz Normal tape
6	Output Noise Level	Under 2.5 mV	Blank Tape		NOR	оит		LINE OUT		
7	Bias Leakage Adjustment	MIN.			NOR	OUT	Z403 Z404	T.P. 24L T.P. 24R		
8	Line Input Level Adjustment	580 ±10mV		Adjustment	CrO <sub>2</sub>	OUT	REC Volume	LINE OUT	400 Hz 17 dB	REC. Volume adjustment must be kept till frequency response adjustment
		Meter Ind. +3 dB			CrO <sub>2</sub>	OUT	R709, 710	LED Meter	400 Hz –17 dB	One square (Red LED) lights.
9	Meter Adjustment	Meter Indi. —3 dB			CrO <sub>2</sub>	OUT	R709, 710	LED Meter	400 Hz –23 dB	Four squares (Yellow LEDs) light.
10	Record Playback Frequency Response Adjustment	0 <sup>+2</sup> dB	AC-512	4	CrO <sub>2</sub>	OUT	R465 R466	LINE OUT	400 Hz to 10 KHz -40 dB	
11	Record/Playback Sensitivity Adjustment	580 ±10mV	AC-512		CrO <sub>2</sub>	OUT	R463 R464	LINE OUT	400 Hz -17 dB	

Measurement Condition

Power Supply TE: 220V/TU, AY: 240V/VF: 115, 230V/TA, TC: 120V

■ Input: 0 dB = 1V rms ■ LINE IN (Input Impedance): 600 ohm ■ LINE OUT (Load Impedance): 47 K ohm

• Test Point Load Impedance: No Load

( Playback Sencitivity Adjustmi Test Tape (MTT-150) R/P Head (R) (Bias Leak Adjustment) AMP. (L) AMP. (R) (Line Input Adjustment) Signal Resistance Generator Attenuator -17 dB400 Hz Figure 37 LI (Rec/Play Sensitivity Adjustmer Signal Generator Resistance Attenuator -17 dB 400 Hz Figure 38 (Rec/Play Frequency Characteri Signal Generator Resistance Attenuator —40 dBV 400 Hz/10 kHz

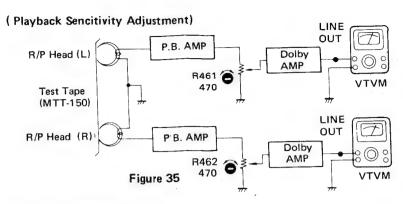
Figuer 39

PC-D12	PC-D12
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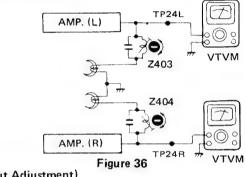
Test	Volume Control	Switch	Position	Adjustment	Test	Test Freq.	Remarks	
Tape	REC	TAPE	DOLBY	Points	Points	ATT	Helilaiks	
MTT-111		NOR	оит	Head Azimuth Adjustment Screw	LINE OUT		After Adjustment lock with screw point.	
MTT-111		NOR	ОИТ	Semi-fixed resistor in the Motor	LINE OUT			
MTT-150		NOR	OUT	R461 R462	LINE OUT			
MTT-215C		NOR	ОПТ		LINE OUT		10 KHz Level difference for 315 Hz	
MTT-215C		NOR	оит		LINE OUT		Change for 10 KHz Normal tape	
Blank Tape		NOR	ОПТ		LINE OUT			
	J	NOR	OUT	Z403 Z404	T.P. 24L T.P. 24R			
	Adjustment	CrO <sub>2</sub>	OUT	REC Volume	LINE OUT	400 Hz -17 dB	REC. Volume adjustment must be kept till frequency response adjustment	
		CrO <sub>2</sub>	OUT	R709, 710	LED Meter	400 Hz17 dB	One square (Red LED) lights.	
		CrO <sub>2</sub>	OUT	R709, 710	LED Meter	400 Hz –23 dB	Four squares (Yellow LEDs) light.	
AC-512		CrO <sub>2</sub>	OUT	R465 R466	LINE OUT	400 Hz to 10 KHz –40 dB		
AC-512		CrO <sub>2</sub>	OUT	R463 R464	LINE OUT	400 Hz 17 dB		

VF.: 115, 230V/TA, TC: 120V

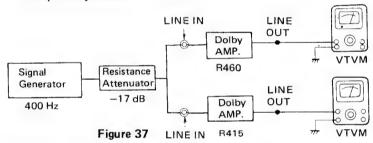
Impedance): 600 ohm ● LINE OUT (Load Impedance): 47 K ohm



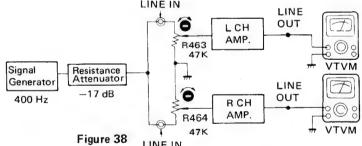
#### (Bias Leak Adjustment)



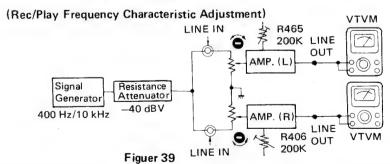
#### (Line Input Adjustment)



#### (Rec/Play Sensitivity Adjustment)



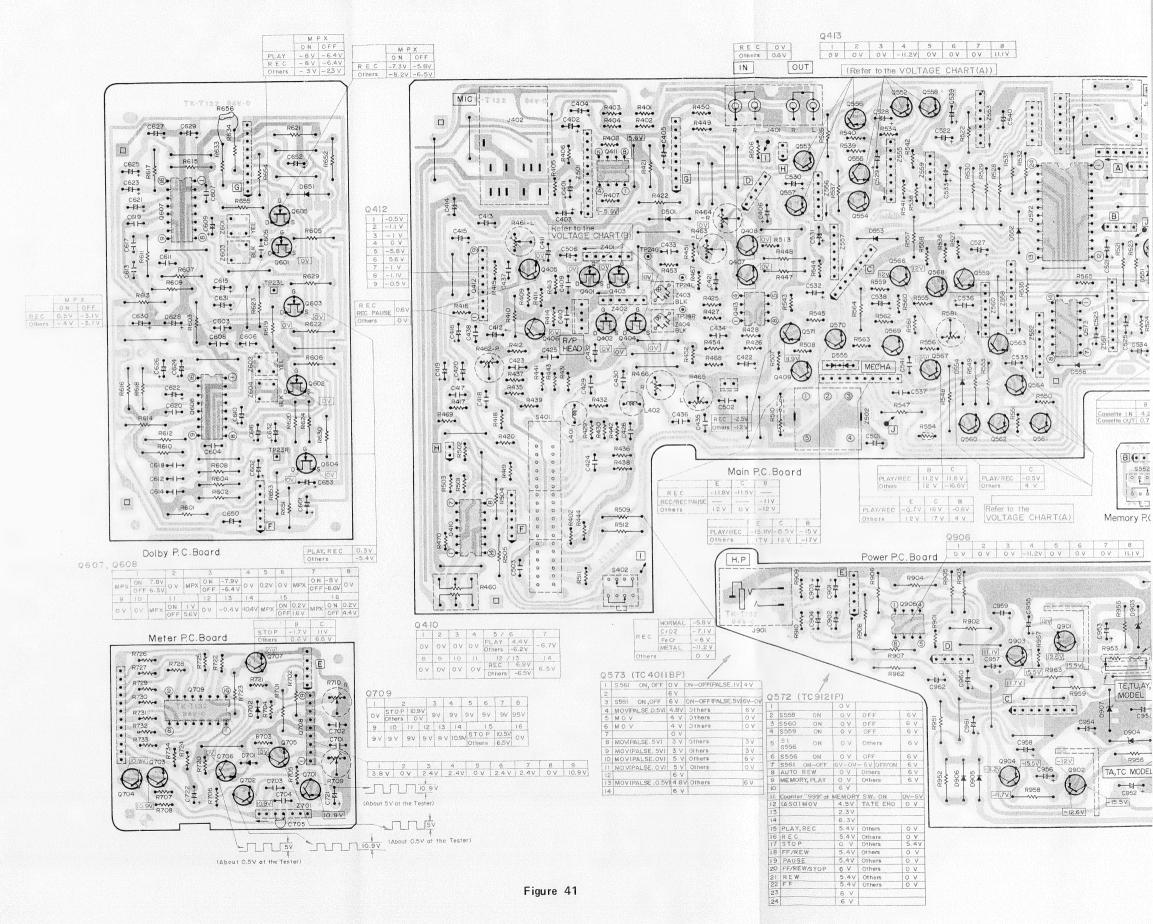
LINEIN



PC-D12

PC-D12

# 9. P.C BOARD PARTS LOCATIONS



VOLTAGE CHART(A)

Q 553 C R E C 11 V Others -6.5 V

#Q555 REC 10.6V 0 V Others 0 V 06V

Q 5 5 7

| E | C | R E | C | O IV | O

| MO V | O.V | O.6 V | NO MOV | S.6 V | O.V | O.

| Q561 | E | B | PLAY/REC 3.6V | 2.8V | FF/REW 7.3V | S10 P | 7.8V | F F | G.5V | PEW/STOP - 7.3V |

Q562

| FLAY/REC 3.6V 3.5V |
| FF/STOP --- 7.3V |
| REW --- 6.5V |
| STOP 7.8V |
| FF/REW 7.3V |
| FF/REW 7.3V |

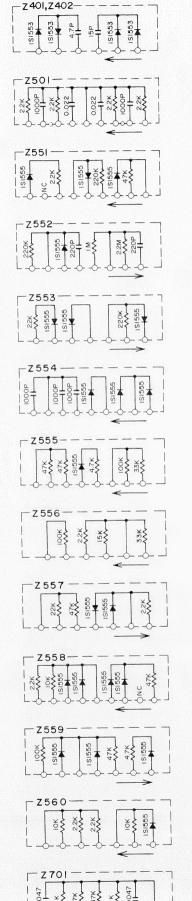
Q 5 6 4

REW/STOP 7.3V ——
PLAY/REC 0.1V ——
REW 0.1V ——
PLAY/REC/FF —— 0.1V
Others —— 7.3V

Others O V

Q 403, Q 404(G)

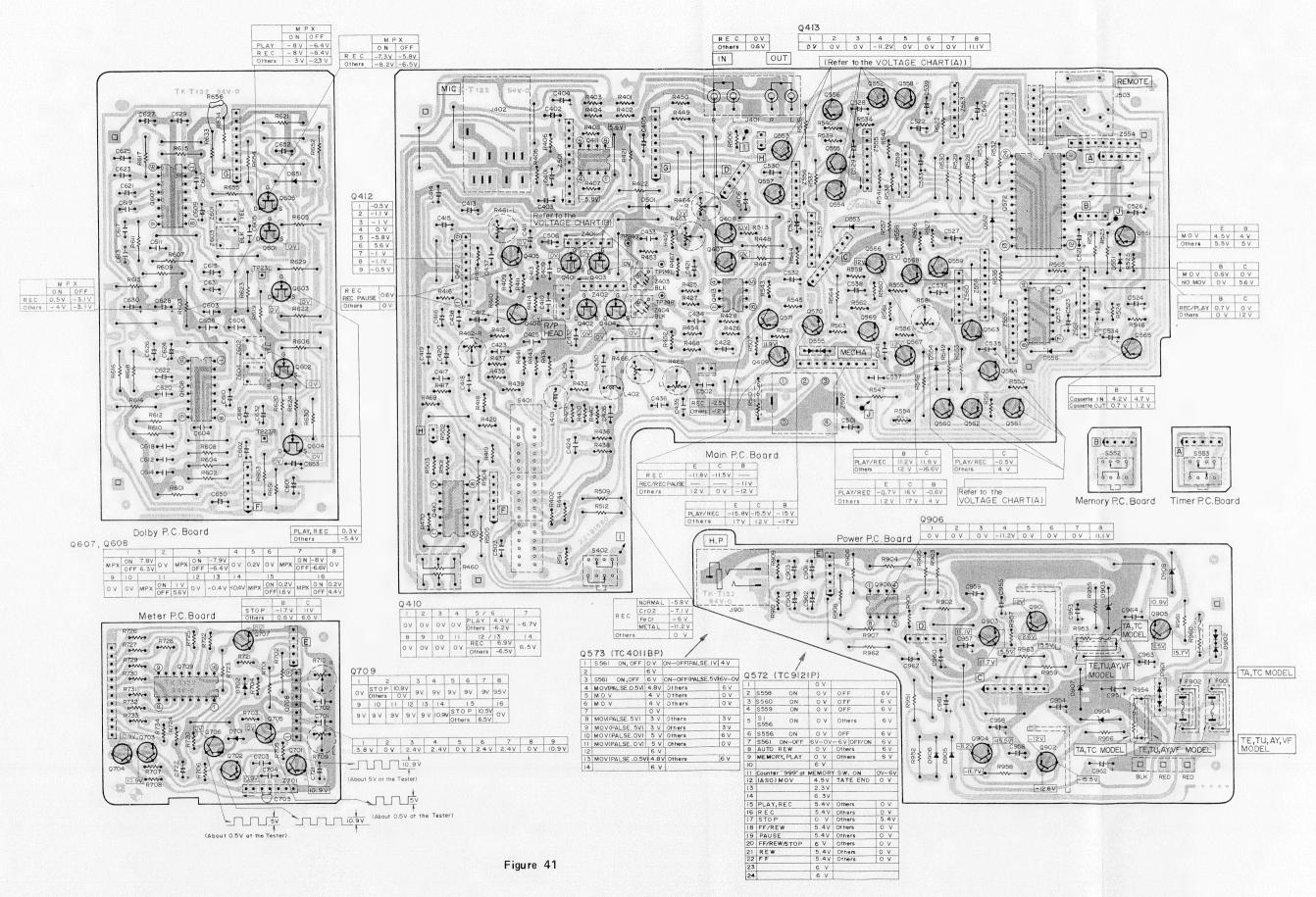
R E C | NORMAL | -20V |
CR02 | -23V |
Fe Cr | -21V |
METAL | -26V |
Others O V



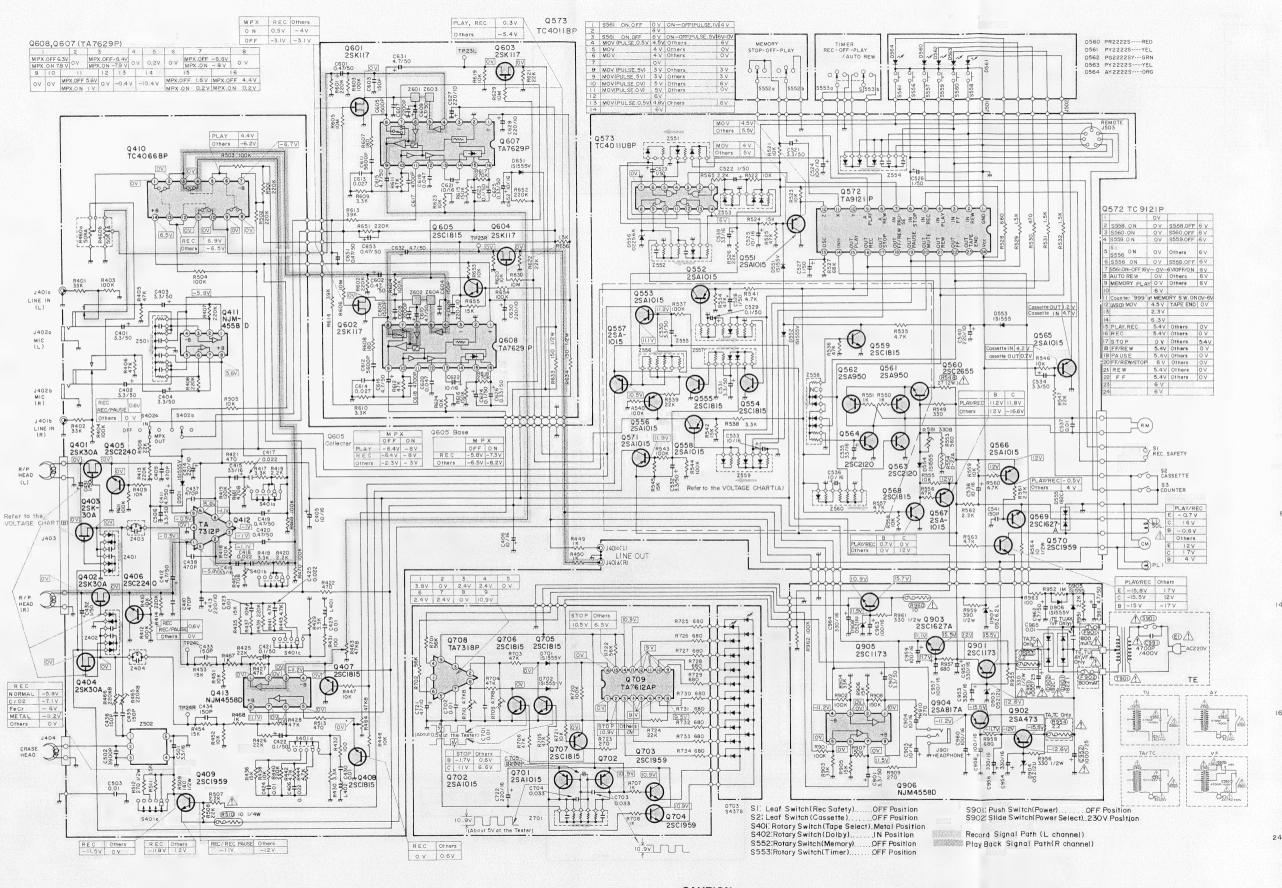
Composite parts Circuit diagram

Figure 40

### 9. P.C BOARD PARTS LOCATIONS



## 10. SCHEMATIC DIAGRAM



#### CAUTION:

The  $\triangle$  mark, the symbol No. circlued with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

e e

2SC2655 2SC1627-A

25K30A

2SK117

2SC2240 2SC2120 2SC1959 2SA950 2SA1015

25C1173 25A473

TA7312P TA7318P

NJM4558 D

TC4066BP TC4011UBP

TA7629P

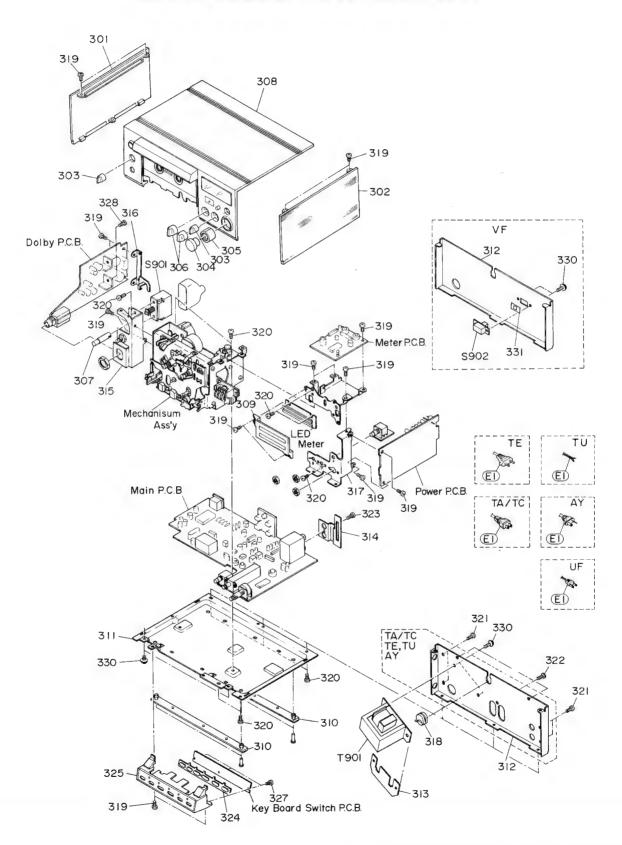
13

Carry Will

TA9121P

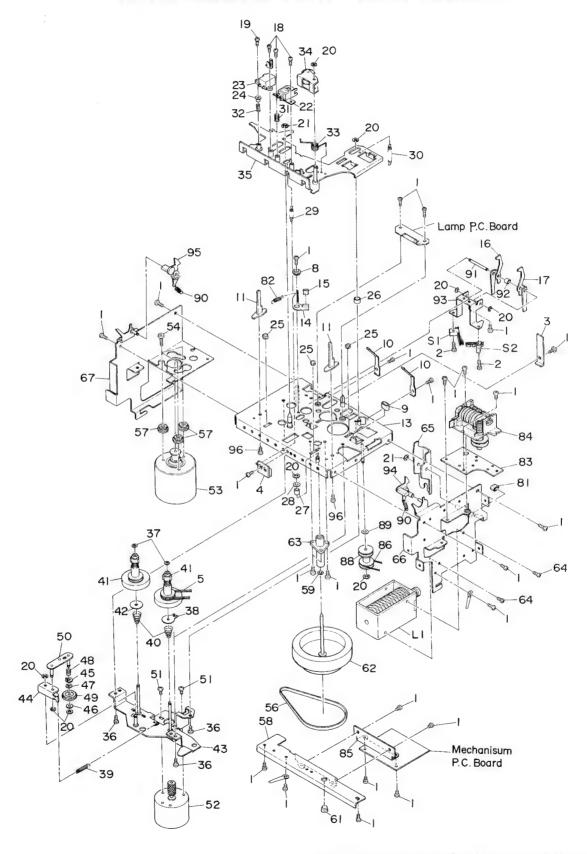
-18 -

## 12.EXPLODED VIEW (CABINET)



NOTE: Parts excluded in the Parts List are not available as replacement parts.

# 13. EXPLODED VIEW (MECHANISM)



NOTE: Parts excluded in the Parts List are not available as replacement parts

## 14. PARTS LIST

CAUTION:
The \( \triangle \) mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description		Symbol No.	Part No.	Description
	MECHAN	IICAL PARTS		57	25761238	Cushion
			!	59	25764398	Washer, $2.5\phi$
1	22707735	Screw, DT BID, $2.6\phi \times 5$ mm	(	61	25783219	Screw, Thrust
2	22707169	Screw, BID, $2.6\phi \times 10$ mm		62	25717451	Flywheel Ass'y
5	25755398	Belt, Counter		63	25718158	Holder Ass'y, Capstan
В	25724420	Bush		64	22707452	Screw, BID, $3\phi \times 6$ mm
9	25761400	Stopper, Head Chassis		81	25761354	Arm Cushion
11	25783205	Guide, A		82	25771898	, ,
15	25762384	Felt, Fric		84	25873234	
18	22707451	Screw, BID, $2\phi \times 5$ mm		86	25755342	
19	22707505	Screw, BID, $2\phi \times 6$ mm		88	25756237	
20	22703118	E Washer, $2\phi$		89	22703306	Washer
21	22703279	E Washer, $3\phi$		90	25771963	Spring
22	22217357	Head, R/PB, HRPT-77		91	25724827	Bush
23	22218223	Head, Erase, HET-50		92	25724833	Roller
24	25726489	Sleeve, Erase Head		94	25782257	Holder, Cassette, Right
25	25753325	Roller		95	25782292	Holder, Cassette, Left
26	25753347	Roller, H		96	22707461	Screw, BID Tapping,
27	25753348	Roller, HL				$2.6\phi \times 6$ mm
28	25764400	Washer, $3\phi$				
29	25771704	Spring	1 +			
	25771951	Spring	1 1		CABI	NET PARTS
30	25771931	Spring, Head				
31		Spring, Head Spring, Erase Head		301	25829387	Plate, Side, Left
32	25772438			302	25829388	Plate, Side, Right
33	25773469	Spring, Pinch Lever		303	25837494	Knob, Select
34	25717457	Roller Ass'y, Pinch		304	25837513	Knob, Volume, Left
35	25791268	Chassis Ass'y, Head		305	25837514	Knob, Volume, Right
36	22707494	Screw, DT BID, $2.6\phi \times 4$ mm		306	25837515	Knob, Select
37	25764549	Washer, $1.7\phi$		307	25816562	Knob, Power
38	25766019	Washer, Back Tension		308	25819460	Front Panel Ass'y (TA)
39	25771586	Spring		308	25819461	Front Panel Ass'y (TC)
40	25772254	Spring, Back Tension		308	25819462	·
41	25712360	Reel Drum Ass'y				(TE, TU, AY, VF)
42	25764570	Washer, $2.1\phi$		309	25832456	
43	25791269	Reel Mount Ass'y		310	25835408	
45	25735246	Retainer, Spring		312	25838569	
46	25735252			312	25838568	,
47	25762401	Felt, FF		312	25838570	
48	25777041	Spring, Idler FF		312	25838577	
49	25713543	Idler Ass'y, FF	$\Delta$	318	25845120	STREET CONTROL OF STREET OF STREET AND ADDRESS OF STREET AND ADDRE
50	25791141	Plate B Ass'y, Idler	$\Delta$	318	25845528	
51	22701389		1-	319	2270736	AND THE PROPERTY OF CONTRACTOR OF THE PROPERTY
52	22791284			320	2270744	
53	25791215	Motor Ass'y, Main		321	2270744	
54	22707429	Screw, Motor		322	2270132	1
56	25755448	Belt, Main	1	323	2270148	
				324	2275119	
				325	2581946	
	1		- 1	323	2301340	0 100 DOV W33 A

Symbol No.	Part No.	Description	-	Symbol No.	Part No.	Description
327	22707651	Screw, PAN, Tapping,		Ω708		IC, TA7318P-2
027		$1.7\phi \times 4$ mm		Q709		IC, TA7612AP
328	22701313	Screw, BID, 3φ x 4mm				
329	22707521	Screw, DT BID, 3\phi x 6mm		Q901		Transistor, 2SC1173-Y
330	22707456	Screw, FL DT, $3\phi \times 8$ mm		Q902		Transistor, 2SA473-Y
331	22950753	Label, Voltage (VF)		Ω903		Transistor, 2SC1627A-Y
331	22300700	Edber, Cortago (CC)		Q904		Transistor, 2SA817A-Y
				Ω905		Transistor, 2SC1173-Y
				Q906	22114470	IC, NJM4558D-A
T!	RANSISTOR	S, DIODES AND ICS		D501		Diode, 1S1555V
Q401, 402		Transistor, 2SK30A-TM-GR-Y				
Q403, 404				D551, 552		Diode, 1S1555V
Q405, 406		Transistor, 2SC2240NEW-GR		D553, 554		
Q407, 408		Transistor, 2SC1815NEW-GR		D555		Diode, 1B2C1
Q409		Transistor, 2SC1959NEW-Y		D556		Diode, 02Z5.6A
Q410		IC, TC4066BP		5000		
Q411	22114470	IC, NJM4558D-A		D560	22115658	Diode, PR2222S-RED
Q412		IC, TA7312P-N, JA		D561	22115659	Diode, PY2222S-YEL
Q413	22114470	NJM4558D-A		D562	22115660	Diode, PG2222SY-GRN
Q551		Transistor, 2SA1015-GR		D563	22115659	Diode, PY2222S-YEL
Q552		Transistor, 2SA1015-GR		D564	22115661	Diode, AY2222S-ORG
Q553		Transistor, 2SA1015-GR		D304	22115001	Diode, A 122225-011G
Q554		Transistor, 2SC1815NEW-GR		D651		Diode, 1S1555V
Q555		Transistor, 2SC1815NEW-GR		10051		Diode, 131353V
Q556	1	Transistor, 2SA1015-GR		D701, 702		Diode, 1S1555V
Q557		Transistor, 2SA1015-GR		D701, 702		Diode, 131955V
Q558		Transistor, 2SA1015-GR		0703		Diode, 34378
Q559		Transistor, 2SC1815NEW-GR	$\Delta$	D901		Diode, 1B2Z1
Q560		Transistor, 2SC2655-Y-O/Y		D901		
Q561		Transistor, 2SA950-Y	44	D902 D903, 904		Diode, 1B2C1
Q562		Transistor, 2SA950-Y		D905, 904		Diode, 05Z12U
Q562 Q563		Transistor, 2SC2120-Y		D905		Diode, 1S1553V
Q564		Transistor, 2SC2120-Y		D900		Diode, 1S1555V Diode, 05Z6.2L
Q565		Transistor, 2SA1015-GR		D907		Diode, 05Z11U
Q566		Transistor, 2SA1015-GR		D908		Diode, 032110
Q567		Transistor, 2SA1015-GR	ļ			
Q568		Transistor, 2SC1815NEW-GR				
Q569		Transistor, 2SC1627A-Y				
Q570		Transistor, 2SC1959NEW-Y				
Q571		Transistor, 2SA1015-GR				
Q571		IC, TA9121P				
Q572		IC, TC4011UBP			ELECT	RICAL PARTS
0573		10, 104011031		T001	2222244	Transformer, Power (TA, TC)
Ω601, 602		Transistor, 2SK117-BL		T901	22223841	
Q603, 604		1101313101, 2011117-DL	1 .	T901	22223842	PPC Tools to the control of the cont
Q605 Q605		Transistor, 2SC1815NEW-GR		T901 T901	22223843	The second section of the second section is the second section of the second section in the second section is
Q607, 608		IC, TA7629P	4	1301	22223887	Transformer, Power (VF)
		T - 1 - 00110/- 0-		J401	22163759	
0701, 702		Transistor, 2SA1015-GR		J402	22163675	
Q703, 704		Transistor, 2SC1959NEW-Y		J503	22167893	
	1	Transistor, 2SC1815NEW-GR	1	1 1001	100160777	leate Haadahama
Q705, 706 Q707		Transistor, 23CTBT3NEW-GIT	1	J901	22163777	Jack, Headphone

, 1	Symbol No.	Part No.	Description		Symbol No.	Part No.	Description
,					C415, 416	22485330	EL, 33mfd, 16V
	S1	22195199	Switch, Leaf, Record Safety		C417, 418	22371223	MY, 0.022mfd, 50V, J
	S2	22195199	Switch, Leaf, Cassette	- 1	C419, 420	22488478	EL, 0.47mfd, 50V
	S401	22195680	Switch, Rotary, Tape Select	ı	C421, 422	22480003	EL, 0.1mfd, 50V
	S402	22195326	Switch, Rotary, Dolby		C423, 424	22371103	MY, 0.01mfd, 50V, J
	S552	22195220	Switch, Rotary, Memory		C425, 426	22371223	MY, 0.022mfd, 50V, J
	S553	22195220	Switch, Rotary, Timer		C429, 430	22371103	MY, 0.01mfd, 50V, J
$\triangle$	S901	22195226			C431, 432	22488109	EL, 1mfd, 50V
$\Phi$	S901	22195378			C433, 434	22349151	CD, 150pF, 50V, K
Λ			(TE, TU, AY, VF)		C435, 436	22349151	CD, 150pF, 50V, K
$\Delta$	S902 PL1	22146186 22113484	Switch, Slide Power Select (VF) Lamp, 50mA/14V		C437, 438	22349471	CD, 470pF, 50V, K
$\Delta$	L1	22147227	Solenoid		C501	22485330	EL, 33mfd, 16V
	L401, 402	22211264	Coil, 5.6mH		C502	1	MY, 3900pF, 50V, J
$\triangle$	F901, 902	22144387	Fuse, 800mAT		C503	22342103	CD, 0.01mfd, 50V, Z
			(TE, TU, AY, VF)		C506	22488339	
	Z401, 402	22130588	Composite Parts SW A		0300	22400000	22, 5.51114, 55 4
	Z403, 404	22153158	Filter Block		C521	22488339	EL, 3.3mfd, 50V
	Z501	22130593	Composite Parts, Microphone		C522		EL, 1mfd, 50V
	Z502	22132530	Unit, Bias OSC		C523		EL, 1mfd, 50V
	Z551	22130585	1		C524		EL, 100mfd, 10V
	Z552	22130584	Composite Parts, Logic D		C525		EL, 10mfd, 16V
	Z553	22130586			C526		EL, 1mfd, 50V
	Z554	22130583			C527		EL, 1mfd, 50V
	Z555	22130595			C528	22488109	EL, 1mfd, 50V
	Z556	22130591	Composite Parts, SW D		C529	22480003	EL, 0.1mfd, 50V
	Z557	22130592	1		C530	22488339	EL, 3.3mfd, 50V
	Z558	22130580 22130594			C531	22488339	EL, 3.3mfd, 50V
	Z559 Z560	22130594			C532	22488339	EL, 3.3mfd, 50V
	Z601, 602	22150562			C533	22485100	EL, 10mfd, 16V
	Z603, 604	22153157			C534		EL, 3.3mfd, 50V
$\triangle$	House convenience of the Control of the Control of Cont	22176573	A CONTRACTOR OF THE PROPERTY O		C535		EI, 33mfd, 16V
$\Delta$		22176286			C536		EL, 10mfd, 16V
<u>A</u>		22176536			C537		MY, 0.01mfd, 50V, J
$\overline{\Lambda}$		22176588			C538		EL, 10mfd, 16V
$\Delta$			Cord, Power (VF)		C539		EL, 33mfd, 16V
	F-228000 1- 927 2722712 1860	V 101571.000.0015.00000.0000	[26] [26] [26] [26] [26] [26] [26] [26]		C540		EL, 220mfd, 10V
					C541	22349151	CD, 150pF, 50V, K
					C701, 702	22372103	MY, 0.01mfd, 50V, J
		CA	PACITORS	ļ	C703, 704		MY, 0.033mfd, 50V, J
				1	C705		CD, 2200pF, 50V, K
			0 + 100%, Z = -20 + 80%		C721		EL, 47mfd, 10V
	MY = Mylar	HONS: EL	= Electrolytic, CD = Ceramic Disk,		C722	22485221	EL, 220mfd, 16V
	C401, 402	22488339	EL, 3.3mfd, 50V	†	C901, 902		EL, 3.3mfd, 50V
	C401, 402 C403, 404	22488339			C903, 904	22485100	EL, 10mfd, 16V
	C405, 404	22485100		Δ	C951, 952	22486102	EL, 1000mfd, 25V
	C409, 410	22349471		-	0001, 002	22700102	LE, 1000ma, 25V
	C411, 412	22488479					
1)	C413, 414	22483221					

C953, 954 C955, 956 C957, 958 C958 C957, 958 C958 C958 C958 C958 C958 C958 C958 C	ie .
C955, 956 C957, 958 C952, 960 C952, 960 C961, 962 C963 C964 C2485101 C961, 962 C964 C965 C967 C966 C967 C967 C967 C968 C968 C968 C968 C968 C968 C968 C968	ė
C957, 958 C952, 960 C961, 962 C963 C964 C963 C964 C965 C964 C965 C965 C974 C965 C965 C964 C967 C967 C967 C967 C968 C968 C968 C968 C968 C968 C969 C969	e
C952, 960 C961, 962 C2485479 C963 C2485311 EL, 100mfd, 16V C964 C22485311 EL, 330mfd, 16V C965 C2342103 CD, 0.01mfd, 50V, Z CTE, TU, AY, VF) C991 C991 C2340160 C964 C2485301 CD, 0.01mfd, 125V, P (TA, TC) C991 C291 C2940150 CP, 4700pF, 400V, M CTE, TU, AY, VF) C991 C291 C2940150 CP, 4700pF, 400V, M CTE, TU, AY, VF) C991 C2940150 CP, 4700pF, 400V, M CTE, TU, AY, VF) C991 C991 C991 C991 C991 C991 C991 C99	ė
C961, 962 22488479 EL, 4.7mfd, 50V C963 22485101 EL, 100mfd, 16V C964 22485331 EL, 330mfd, 16V C965 22342103 CD, 0.01mfd, 50V, Z (TE, TU, AY, VF) R510 22565152 15K ohm R509 12340140 CD, 0.01mfd, 125V, P.(TA, TC) C991 22340150 CD, 4700pF, 400V, M R511 22555151 170 ohm, 32 2255512 170 ohm, 32 2255510 170 ohm R523 225410 170 ohm R523 2254510 170 ohm R523 2254510 170 ohm R524 2255516 170 ohm R525 2255524 170 ohm R526 2255516 170 ohm R527 22555683 68K ohm R528 2254510 170 ohm R529 2254510 170 ohm R521 2254510 170 ohm R521 2254510 170 ohm R521 2254510 170 ohm R522 2254510 170 ohm R521 2254510 170 ohm R522 2254510 170 ohm R521 2254510 170 ohm R522 2254510 170 ohm R521 2254510 170 ohm R521 2254510 170 ohm R522 2254510 170 ohm R521 2254510 170 ohm R522 2254510 170 ohm R521 2254510 170 ohm R522 2254510 170 ohm R522 2254510 170 ohm R523 2254510 170 ohm R523 2254510 170 ohm R521 2254510 170 ohm R521 2254510 170 ohm R522 2254515 170 ohm R523 2254510 170 ohm R523 2254515 170 ohm R524 2255510 170 ohm R525 2255510 170 ohm R524 2255510 17	ė
C963	ie
C964 C965 C965 C97 C981 C981 C981 C981 C981 C981 C981 C981	ie 😽
CFE, TU, AY, VF  CP91	ie
A         C991         22340140         CD, 0.01mfd, 125V, P (TA, TC)         R512         22547271         270 ohm, ½W           A         C991         22340150         CD, 4700pF, 400V, M         R513         22555471         270 ohm, ½W           A         C991         22340150         CD, 4700pF, 400V, M         R521         22555103         10K ohm           R522         22555103         10K ohm         R522         22555103         10K ohm           R523         22555103         10K ohm         R524         22555633         22545223         22K ohm           All resistors are carbon film ¼W, ±5%, unless otherwise noted.         R526         22545223         22545681         R680 ohm           R401, 402         22555103         33K ohm         R528         22546152         R680 ohm           R403, 404         22555104         100K ohm         R531         22545152         1.5K ohm           R405, 406         22555104         47K ohm         R534         22554152         1.5K ohm           R409, 410         22555103         10K ohm         R536         22555473         47K ohm           R411, 412         22555104         100K ohm         R537         22545104         100K ohm           R415,	
## C991   22340150   CD, 4700pF, 400V, M   R521   22545103   10K ohm   R522   22545103   10K ohm   R522   22545103   10K ohm   R524   22555153   15K ohm   R526   2254523   22545103   R527   22555683   R527   22555683   R528   22545681   R529   R5255687   R526   R5255687   R526   R5255687   R526   R5255687   R526   R5255687   R526   R526   R5255687   R526   R5	
RESISTORS   RESI	
RESISTORS  RESISTORS  RESISTORS  All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402	
RESISTORS  RESISTORS  All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402   22555333   33K ohm   R520   22545152   22545164   22555103   22545164   22555472   22545164   22555104   225551	
RESISTORS  RESISTORS  All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402   22555333   33K ohm   R529   22545152   22545152   22545162   R530   22545152   1.5K ohm   R531   22545152   22545162   1.5K ohm   R531   22545152   22555473   47K ohm   R532   22555473   47K ohm   R534   22555473   47K ohm   R535   22555473   47K ohm   R536   22555473   47K ohm   R536   22555473   47K ohm   R536   22555473   47K ohm   R537   22545104   100K ohm   R538   22555473   47K ohm   R538   225555332   3.3K ohm   R539   22555223   22565104   100K ohm   R539   22555223   22565104   100K ohm   R540   22555104   100K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R542   22555104   100K ohm   R542   22555104   100K ohm   R542   22555104   100K ohm   R542   22555103   15K ohm   R542   22555103   15K ohm   R542   22555103   15K ohm   R543   22555104   100K ohm   R544   22555103   100K ohm   R546   22555103   100K ohm   R547   22555103   100K ohm   R548   22555103   100K ohm   R548	
RESISTORS  All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402   22555333   33K ohm   R531   22545152   22545152   100K ohm   R531   22555104   47K ohm   R531   22555473   47K ohm   R532   22555473   47K ohm   R533   22555473   47K ohm   R536   22555473   47K ohm   R536   22555473   47K ohm   R537   22555473   47K ohm   R537   22545104   100K ohm   R537   22545104   100K ohm   R537   22545104   100K ohm   R538   22555224   220K ohm   R538   22555233   3.3K ohm   R539   22555223   22K ohm   R540   22555104   100K ohm   R541   22555224   220K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R542   22555104   100K ohm   R542   22555104   100K ohm   R542   22555104   100K ohm   R543   22555104   100K ohm   R544   22555104   100K ohm   R545   22555104   100K ohm   R546   22555104   100K ohm   R547   22555103   15K ohm   R548   22555103   15K ohm   R546   22555103   15K ohm   R547   22555103   10K ohm   R548   22555103   10K ohm   R548	
RESISTORS  All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402   22555333   33K ohm   R405, 406   22555473   47K ohm   R531   22555473   47K ohm   R536   22555473   47K ohm   R537   22555473   47K ohm   R538   22555473   47K ohm   R539   47K ohm   R531   22555104   47K ohm   R536   22555473   47K ohm   R537   22555473   47K ohm   R538   22555473   47K ohm   R537   22545104   47K ohm   R538   22555473   47K ohm   R537   22545104   47K ohm   R538   22555473   47K ohm   R537   22545104   47K ohm   R538   22555473   47K ohm   R538   22555473   47K ohm   R537   22545104   100K ohm   R538   22555332   33K ohm   R539   22555233   22K ohm   R540   22555104   100K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R542   22555104   100K ohm   R543   22555104   100K ohm   R542   22555104   100K ohm   R543   22555104   100K ohm   R543   22555104   100K ohm   R544   22555104   100K ohm   R545   22555103   100K ohm   R546   22555103   100K ohm   R547   22555103   100K ohm   R548   22555103   10	
RESISTORS  All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402	
All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402   22555333   33K ohm   R403, 404   22555104   100K ohm   R532   22545152   1.5K ohm   R534   22555472   4.7K ohm   R537   R409, 410   22555104   100K ohm   R538   2255523   225K ohm   R413, 414   22555124   220K ohm   R538   2255523   220K ohm   R539   2255523   220K ohm   R541   22555104   100K ohm   R541   22555104   100K ohm   R541   22555472   4.7K ohm   R542   22555104   100K ohm   R543   22555104   100K ohm   R543   22555104   100K ohm   R544   22555104   100K ohm   R543   22555104   100K ohm   R544   22555104   100K ohm   R544   22555104   100K ohm   R545   22555104   100K ohm   R546   22555103   15K ohm   R546   22555103   10K ohm   R547   22555103   10K ohm   R548	
All resistors are carbon film ¼W, ±5%, unless otherwise noted.  R401, 402	
R401, 402         22555333         33K ohm         R530         22545471         470 ohm           R401, 402         22555333         33K ohm         R531         22545152         1.5K ohm           R403, 404         22555104         100K ohm         R532         22545152         1.5K ohm           R405, 406         22555473         47K ohm         R534         22555473         47K ohm           R407, 408         22555224         220K ohm         R536         22555472         4.7K ohm           R409, 410         22555103         10K ohm         R537         22545104         47K ohm           R411, 412         22555104         100K ohm         R538         22555332         3.3K ohm           R415, 416         22555124         120K ohm         R539         22555223         22K ohm           R417, 418         22555332         3.3K ohm         R541         22555104         4.7K ohm           R421, 422         22545471         470 ohm         R542         22555104         4.7K ohm           R425, 426         22555223         22K ohm         R543         22555104         100K ohm           R427, 428         22555332         3.3K ohm         R544         22555104         100K ohm	
R401, 402	
R401, 402       22585333       33K 0hm         R403, 404       22555104       100K ohm       R532       22545152       1.5K ohm         R405, 406       22555473       47K ohm       R535       22555473       47K ohm         R407, 408       22555103       10K ohm       R535       22555472       4.7K ohm         R409, 410       22555103       10K ohm       R536       22555473       47K ohm         R411, 412       22555104       100K ohm       R537       22545104       100K ohm         R413, 414       22555224       220K ohm       R538       22555332       3.3K ohm         R415, 416       22555124       120K ohm       R539       22555223       22K ohm         R417, 418       22555332       3.3K ohm       R540       22555104       100K ohm         R421, 422       22545471       470 ohm       R542       22555104       4.7K ohm         R425, 426       22555223       22K ohm       R543       22555104       15K ohm         R427, 428       22555332       3.3K ohm       R544       22555104       100K ohm         R429, 430       22555332       3.3K ohm       R545       22555103       15K ohm         R431, 432	
R403, 404       22555104       100K ohm       R532       22545152       1.5K ohm         R405, 406       22555473       47K ohm       R534       22555473       47K ohm         R407, 408       22555224       220K ohm       R535       22555472       4.7K ohm         R409, 410       22555103       10K ohm       R536       22555473       47K ohm         R411, 412       22555104       100K ohm       R537       22545104       100K ohm         R413, 414       22555224       220K ohm       R538       22555332       3.3K ohm         R415, 416       22555124       120K ohm       R539       22555223       22K ohm         R419, 420       22555332       3.3K ohm       R540       22555104       100K ohm         R421, 422       22545471       470 ohm       R542       22555104       4.7K ohm         R425, 426       22555223       22K ohm       R543       22555104       100K ohm         R427, 428       22555472       4.7K ohm       R544       22555104       100K ohm         R429, 430       22555332       3.3K ohm       R546       22555103       10K ohm         R431, 432       22555101       100 ohm       R547       22555103 <td></td>	
R405, 406       22555473       47K ohm         R407, 408       22555224       220K ohm       R535       22555472       4.7K ohm         R409, 410       22555103       10K ohm       R536       22555473       47K ohm         R411, 412       22555104       100K ohm       R537       22545104       100K ohm         R413, 414       22555224       220K ohm       R538       22555332       3.3K ohm         R415, 416       22555124       120K ohm       R539       22555223       22K ohm         R417, 418       22555332       3.3K ohm       R540       22555104       100K ohm         R419, 420       22555222       2.2K ohm       R541       22555472       4.7K ohm         R421, 422       22545471       470 ohm       R542       22555104       15K ohm         R425, 426       22555223       22K ohm       R543       22555104       100K ohm         R427, 428       22555472       4.7K ohm       R544       22555104       100K ohm         R429, 430       22555332       3.3K ohm       R545       22555103       15K ohm         R431, 432       22555101       100 ohm       R547       22555103       10K ohm	
R407, 408       22555224       220K ohm       R535       22555472       4.7K ohm         R409, 410       22555103       10K ohm       R536       22555473       47K ohm         R411, 412       22555104       100K ohm       R537       22545104       100K ohm         R413, 414       22555224       220K ohm       R538       22555332       3.3K ohm         R415, 416       22555124       120K ohm       R540       22555104       100K ohm         R417, 418       22555332       3.3K ohm       R541       22555104       100K ohm         R419, 420       22555222       2.2K ohm       R541       22555472       4.7K ohm         R421, 422       22545471       470 ohm       R542       22555104       15K ohm         R427, 428       22555472       4.7K ohm       R543       22555104       100K ohm         R429, 430       22555332       3.3K ohm       R545       22555103       15K ohm         R431, 432       22555101       100 ohm       R547       22555103       10K ohm	
R409, 410       22555103       10K ohm       R536       22555473       47K ohm         R411, 412       22555104       100K ohm       R537       22545104       100K ohm         R413, 414       22555224       220K ohm       R538       22555332       3.3K ohm         R415, 416       22555124       120K ohm       R539       22555223       22K ohm         R417, 418       22555332       3.3K ohm       R540       22555104       100K ohm         R419, 420       22555222       2.2K ohm       R541       22555472       4.7K ohm         R421, 422       22545471       470 ohm       R542       22555104       15K ohm         R427, 428       22555472       4.7K ohm       R544       22555104       100K ohm         R429, 430       22555332       3.3K ohm       R545       22555103       15K ohm         R431, 432       22555101       100 ohm       R547       22555103       10K ohm	
R411, 412       22555104       100K ohm       R537       22545104       100K ohm         R413, 414       22555224       220K ohm       R538       22555332       3.3K ohm         R415, 416       22555124       120K ohm       R539       22555223       22K ohm         R417, 418       22555332       3.3K ohm       R540       22555104       100K ohm         R419, 420       22555222       2.2K ohm       R541       22555472       4.7K ohm         R421, 422       22545471       470 ohm       R542       22555104       15K ohm         R425, 426       22555223       22K ohm       R543       22555104       100K ohm         R427, 428       22555472       4.7K ohm       R544       22555104       100K ohm         R429, 430       22555332       3.3K ohm       R545       22555103       15K ohm         R431, 432       22555101       100 ohm       R547       22555103       10K ohm	
R413, 414 22555224 220K offm R415, 416 22555124 120K ohm R417, 418 22555332 3.3K ohm R419, 420 22555222 2.2K ohm R421, 422 22545471 470 ohm R425, 426 2255523 22K ohm R427, 428 22555472 4.7K ohm R429, 430 22555332 3.3K ohm R431, 432 22555101 100 ohm R543 22555103 22K ohm R544 22555104 100K ohm R545 22555104 100K ohm R546 22555103 10K ohm R547 22555103 10K ohm	
R415, 416   22555124   120K ohm   R540   22555104   100K ohm   R541   22555472   4.7K ohm   R542   22555104   100K ohm   R542   22555104   100K ohm   R542   22555104   100K ohm   R543   22555104   100K ohm   R547   R548   22555104   100K ohm   R549   R549   R549   R549   R549   R546   R546   R546   R546   R546   R547   R546   R547   R548   R549   R548   R549   R548   R549   R548   R549   R548   R549   R54	
R417, 418	
R419, 420	
R421, 422	
R425, 426	
R427, 428   2255472   4.7K ohm   R545   22555153   15K ohm   R431, 432   22555101   100 ohm   R545   22555103   10K ohm   R547   22555103   22K ohm   R547   22555103   22	
R429, 430 2255532 3.3K 0lill R431, 432 22555101 100 ohm R546 22555103 10K ohm	
11451, 402 22550101 105 5mm	
1435, 430 22505130 151 511 511 511 511 511 511 511 511 51	
DEA0 22545230 230 chm	Andreas and a second
R439, 440 22333224 2201 01111	
100 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
N443, 444   22333472   4.71 0 mm	
1447, 440 Z2545100 Tell 51111	2A
11440, 400 2200 102 10X -h	
11401, 402 22000100 10101000 10101000 10101000 10101000 1010000 10100000 101000000	
R453, 454   22555153   15K ohm   R556   2255473   47K ohm   R557   22545472   4.7K ohm	
R460 22655432 50K ohm, A, Variable R558 22555103 10K ohm	
R460 22653452 50K 0HH, A, Validate R559 22555103 10K ohm	
R461, 462 22658560 476 ohm, B, Semi-fixed R560 22555472 4.7K ohm	
R465, 466   22658560   47K ohm, B, Semi-fixed   R561   22555222   2.2K ohm	
R465, 466   225555102   1K ohm   R562   22555222   2.2K ohm	
R469, 470   22555104   100K ohm	

R563				No.	Part No.	Description
	22555472	4.7K ohm		R951	22545222	2.2K ohm
R564	22547100	10 ohm, ½W		R952	22545105	1M ohm
R565	22555222	2.2K ohm	$\triangle$	R953, 954	22500167	2.2 ohm, Fusible (TA, TC)
				R955, 956	22547331	330 ohm, 1/2W
R581	22658555	330 ohm, B, Semi-fixed	ŀ	R957, 958	22555681	680 ohm
		, , ,	- 1	R959	22547391	390 ohm, ½W
R601, 602	22545224	220K ohm	$\triangle$	R960	22500130	10 ohm, Fusible
R603, 604	22545104	100K ohm		R961	22547331	330 ohm, ½W
R605, 606	22545105	10M ohm		R962	22545104	100K ohm
R607, 608	22545181	180 ohm		R963	22545101	100 ohm
R609, 610	22545332	3.3K ohm				
R611, 612	22545473	47K ohm				
R613, 614	22545393	39K ohm				
R615, 616	22545154	150K ohm				1
R617, 618	22545274	270K ohm			ACC	ESSORIES
R619, 620	22545103	10K ohm			22164775	Cord, Joint
R621, 622	22545223	22K ohm			22881047	Cover, Dust
R623, 624	22545103	10K ohm			22990756	Cleaner, Head
R629, 630	22545105	10M ohm			22990730	
R633, 634	22547151	150 ohm, ½W			22902842	
					22902845	
R651		220K ohm	İ		22902043	Owner's Maridai (VI)
R652	22545224					
R653	22545103					in the second se
R654	22545104					
R655	22545153					
R656	22545152	1.5K ohm				
R701, 702	22545563	56K ohm				
R703, 704	22555473	47K ohm				
R705, 706	22555473	47K ohm				
R707, 708	22555102	1				
R709, 710	22658558	4.7K ohm, B, Semi-fixed				
R720	22555104	100K ohm				
R721	22555103		İ			
R722	22555563		İ		1	
R723	22545271					
R724	22555223	•				
R725, 726						
R727, 728		680 ohm				
R729, 730	- i		]			
R731, 732	1					
R733, 734						
R901, 902						
R903, 904		1		1		
R905, 906						
R907, 908						
R909, 910	2255527	1 270 ohm		1		
			1			